

CLAIMS

1 – Broadband monopole antenna, comprising a radiating element mounted on an earth plane forming support (3, 12) of annular shape,
5 characterized in that the radiating element has a “cup” shape made on the basis of a metallizable material.

2 – Antenna according to Claim 1, characterized in that the metallizable material is a metallizable plastic or a metallizable foam.

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3 – Antenna according to either of Claims 1 and 2, characterized in that the external profile of the “cup”-shaped radiating element is given by the following equations:

For $1.3 < t < 4.075$

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$$x(t) = 8 + 1.9 * t * \cos(t - 7)$$

$$z(t) = 2.5 + 12.5 \frac{\sin(t)}{t}$$

4 – Antenna according to any one of Claims 1 to 3, characterized
20 in that the earth plane forming support (3) of annular shape consists of a circular annulus (3a) furnished at its centre with an aperture (3b) extended by a cylindrical element (3c) intended to receive the stem of the “cup”-shaped radiating element.

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5 – Antenna according to Claim 6, characterized in that the external end of the annulus is inwardly curved in such a way as to form a semi-toroidal element.

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6 – Antenna according to either of Claims 4 and 5, characterized in that the earth plane forming support is made with the aid of a metallizable foam, a metal, a metallizable plastic.

7 – Process for manufacturing an antenna according to any one of Claims 1 to 6, characterized in that the “cup”-shaped radiating element is made by injection moulding of a plastic followed by the metallization of at least the exterior surface of the “cup”-shaped element.

8 – Process according to Claim 7, characterized in that the earth plane forming support is made by injection moulding of a plastic and metallization of at least the earth plane forming part.

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9 – Process according to Claim 7 or 8, characterized in that the metallization is achieved by vacuum spraying of the metal or by an electrochemical process.

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10 – Process for manufacturing an antenna according to any one of Claims 1 to 6, characterized in that the “cup”-shaped radiating element is made by machining a block of plastic foam followed by the metallization of at least the exterior surface of the “cup”-shaped element.

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11 – Process according to Claim 10, characterized in that the earth plane forming support is made by machining a block of plastic foam followed by the metallization of at least the earth plane forming part.

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12 – Process according to Claims 10 and 11, characterized in that the cup-shaped element and the earth plane forming support are made by machining a single block of foam.

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13 – Process according to one of Claims 10 to 12, characterized in that the metallization is achieved by atomization of an electrically conducting paint.